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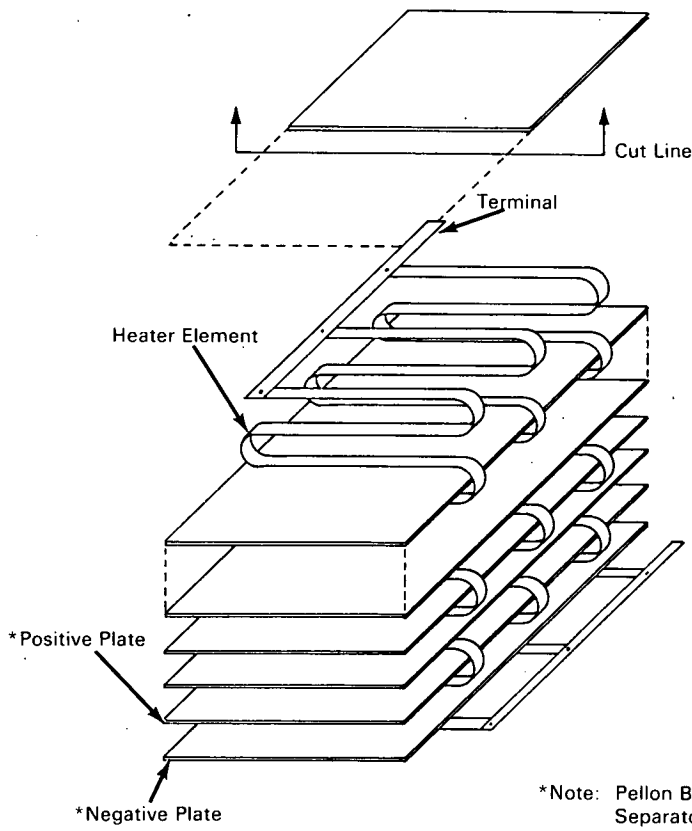
Brief 68-10325

NASA TECH BRIEF

Electrochemical Cell Has Internal Resistive Heater Element



A means has been provided to internally heat electrochemical cells by supplying power from an external source (solar array, power supply, etc.) to a resistive heater element incorporated in the cell construction.

Operation of an electrochemical cell during the charge cycle is such that an endothermic reaction occurs and heat is absorbed. Due to this reaction, the cell, when originally cold, is unable to accept a full charge in the normal charging time and its operational efficiency is thereby impaired. It was therefore determined to investigate the possibility of developing to an operational state the concept of electrochemical cell heater elements, patented by Edison in 1912 but never pursued further.

The prototype developed and constructed during this investigation, differs from that of a conventional

(continued overleaf)

cell in that each plate is individually contained in its own Pellon bag, whereas conventional cell plates are separated by a continuous wrap. This is done to permit the heater element to be arranged in a continuous, parallel circuit, as shown in the figure. While conventional construction could be used, with the heater element interleaved between two continuous Pellon wraps, a certain loss in efficiency would result.

Notes:

1. Although development of this cell construction has been stimulated by the very low temperature conditions encountered in space exploration, its usefulness in the colder regions of the earth is readily apparent.
2. Inquiries concerning this invention may be directed to:

   Technology Utilization Officer
   Goddard Space Flight Center
   Greenbelt, Maryland 20771
   Reference: B68-10325

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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